

**TSUKERMAN, S.V.; KRASOVITSKIY, B.M.**

Condensation of phenanthrenediamine-9,10 with certain aromatic  
peri-di- and peri-tetracarboxylic acids. Ukr.khim.zhur. 20 no.5:  
543-548 '54. (MIRA 8:1)

1. Khar'kovskiy gosudarstvennyy universitet im. A.M.Gor'kogo,  
kafedra organicheskoy khimii.  
(Phenanthrenediamine) (Acids, Organic)

TSUKERMAN, S. V.

USSR/ Chemistry - Organic chemistry

Card 1/1 Pub. 116 - 11/30

Authors : Tsukerman, S. V.; Litvinenko, L. M.; and Grekov, A. P.

Title : Synthesis of methyl ethers of 4-amino- and 4-amino-4'-nitrodiphenic acid

Periodical : Ukr. khim. zhur. 21/3, 341-343, June 1955

Abstract : The synthesis of hitherto unknown methyl ether of 4-amino-4'-nitrodiphenic acid (methyl-4-amino-4'-nitrodiphenate) was accomplished through partial reduction of 4,4'-dinitrodiphenic acid with a methanol-water solution of sodium disulfide and esterification of the product obtained with methyl alcohol in presence of hydrogen chloride. It is shown that the melting point of methyl m-aminobenzoate is 53-54° which is much higher than the value known so far. Ten references: 5 German, 1 English and 4 USSR (1903-1955).

Institution : The A. M. Gorkiy State Univ., Faculty of Organ. Chem., Karkov

Submitted : November 12, 1954

LITVINENKO, L.M.; GREKOV, A.P.; TSUKERMAN, S.V.

Spatial structure and reactivity. Part 3. Restricted inner rotation and kinetics of the acylation of 2,2'-carboethoxyl derivatives of 4-aminobiphenyl and 4-amine-4'-nitrobiphenyl. Ukr. khim. zhur. 21 (MLRA 9:2) no. 4: 510-517 '55.

1. Khar'kovskiy gosudarstvennyy universitet, kafedra organicheskoy khimii. (Acylation) (Biphenyl)

TSUKERMAN, S. V.

USSR/Chemistry - Organic chemistry

Card 1/1 Pub. 22 - 19/51

Authors : Litvinenko, L. M.; Tsukerman, S. V.; and Grekov, A. P.

Title : Retarded internal rotation and the reactivity of amino derivatives of biphenyl

Periodical : Dok. AN SSSR 101/2, 265-268, Mar 11, 1955

Abstract : A study of the acylation reaction kinetics of biphenyl amino derivatives showed that the reaction between the  $\text{NO}_2$  and  $\text{NH}_2$  groups oriented in 4,4'-positions is considerably weakened if the internal rotation of the aromatic nuclei in the molecule is retarded by the introduction of 2,2'-alkyl substituents. The steric effect of 2,2'-carbomethoxyl groups on the reactivity of 4-amino-4'-nitrobiphenyl was investigated. The results obtained are described. Nine references: 3 USSR and 6 USA (1934-1954). Table.

Institution : The A. M. Gorkiy State University, Kharkov

Presented by: Academician I. N. Nazarov, November 2, 1954

TSUKERMAN, S.V.; LYUBOMUDROW, V.F.

Synthesis of  $\gamma$ -oxyalkylaminonitriles. Dokl. AN SSSR 109 no.2:336-339  
Jl '56. (MLRA 9:10)

1. Khar'kovskiy gosudarstvennyy universitet imeni A.M. Gor'kogo i  
Khar'kovskiy gosudarstvennyy meditsinskiy stomatologicheskiy insitut.  
Predstavleno akademikom I.N. Nazarovym.  
(Nitriles)

TSUKERMAN, S.V.

73-2-12/22

AUTHORS: Litvinenko, I.M., Tsukerman, S.V., Grekov, A.P. and Slobodkina, E.A.

TITLE: Space structure and reactivity. IX: Hindered internal rotation and kinetics of the acylation of 2,2'-dicarboisopropoxylic derivatives of 4-aminobiphenyl and 4-amino-4'-nitrobiphenyl. (Prostranstvennoye stroyeniye i reaktsionnaya sposobnost'. IX: Zatormozhennoye vnutrenneye vrashcheniye i kinetika atsilirovaniya 2,2'-dikarboizopropoksil'nykh proizvodnykh 4-aminobifenila i 4-amino-4'-nitrobifenila).

PERIODICAL: "Ukrainskiy Khimicheskiy Zhurnal" (Ukrainian Journal of Chemistry), Vol.23, No.2, March-April, 1957, pp.223-227 (USSR).

ABSTRACT: In an earlier communication it was shown that the interaction between the  $\text{NO}_2$  and the  $\text{NH}_2$  groups is considerably weakened in the second molecule by introducing the 2,2'-position of the carbomethoxyl groups (1). Further investigations have now been carried out to obtain data for determining the kinetics of the acylation reaction of amino-derivatives in a benzene solution, especially of dicarboisopropoxylic derivatives. The 4-amino-4'-nitro-2,2'-dicarboisopropoxylbiphenyl and 4-amino-2,2'-dicarboiso-

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73-2-12/22

Space structure and reactivity. IX: Hindered internal rotation and kinetics of the acylation of 2,2'-dicarboisopropoxylic derivatives of 4-aminobiphenyl and 4-amino-4'-nitrobiphenyl. (Cont.)

propoxybiphenyl were synthesised and the kinetics of acylation by n-nitrobenzyl chloride in a benzene solution were investigated. Table 2 gives results at 25 C and 50 C for the first compound and Table 1 values for the second compound at the same temperatures. On comparing the velocities of acylation of the 2 compounds it can be seen that the carboisopropoxyl groups possess clearly defined electro-acceptor character as the velocity constant during the transition from one compound to the second compound decreases to half its value. Table 4 gives the values of the factors  $F$  (which was defined by the authors as the factor of space interlinking weakening. It shows the effect of weakening of the nitro-group on the amino-group by the molecular system of the biphenyl due to the spatial interaction of the 2,2'-substituents). These factors are for molecular systems of non-substituted biphenyl and its derivatives with ester-grouping in the 2,2'-position. Data given in Tables 3 and 4 show that the

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73-2-12/22

Space structure and reactivity.IX: Hindered internal rotation and kinetics of the acylation of 2,2'-dicarboisopropoxylic derivatives of 4-aminobiphenyl and 4-amino-4'-nitrobiphenyl. (Cont.)

carboisopropoxylic derivatives are closely related to their carbomethoxy-homologues for reasons of their kinetic characteristics and also the effects of the 2,2'-substituents.

There are 4 tables and 7 references, 6 of which are Slavic.

ASSOCIATION: Kharkov State University imeni A.M.Gor'ki,  
Chair of Organic Chemistry (Khar'kovskiy Gosudarstvennyy  
Universitet imeni A.M.Gor'kogo, Kafedra Organicheskoy  
Khimii).

SUBMITTED: October 1, 1956'.

AVAILABLE: Library of Congress  
Card 3/3

TSUKERMAN, S. V.

TSUKERMAN, S. V.; TSUKERMAN, S. V.; CHEN, H. L.; FOMIN, A. V.

Special transition state reactivity. Part II: reaction of 2,5-dichlorobenzene  
through the system of two benzene rings bonded by two chlorine atoms  
with the study of the kinetics of  
nitration of 2-aminodiphenyl ether and 4-amino-4'-nitro-1-phenyl-  
ether and 4-amino-4'-nitrodiphenyl ether. Zhur. khim., 27 no.6:  
1661-1662 (1977). (R. 10:8)

1. The reaction of 2-aminodiphenyl ether with nitric acid.

(a) 2-aminodiphenyl ether  
(b) 4-amino-4'-nitrodiphenyl ether  
(c) 4-amino-4'-nitro-1-phenyl ether

AUTHORS: Litvinenko, L. M., Cheshko, R. S., Tsukerman, S. V. 20-118-5-27/59

TITLE: On the Interaction Between Separated Atomic Groups Through a System of Two Benzene Nuclei Connected by a Bridge (mostikovoye zveno) (O vzaimodeystvii udalennykh drug ot druga atomnykh gruppirovok cherez sistemu dvukh benzol'nykh yader, svyazannykh mostikovym zvenom)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 118, Nr 5, pp. 946-949 (USSR)

ABSTRACT: The mutual influence of atoms or atomic groups in complicated aromatic systems containing several benzene nuclei has only been investigated chemically in isolated and separated publications though a great amount of experimental material on this problem with regard to the simple benzene cycle is found. The authors proved for several amino derivatives of biphenyl that the interaction of the substituents through a system of 2 directly connected benzene nuclei is considerably weakened compared to the analogous benzene derivatives. Nevertheless it is still rather strong (reference 1 - 3). It was interesting to investi-

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On the Interaction Between Separated Atomic Groups  
Through a System of Two Benzene Nuclei Connected by a  
Bridge (mostikovoye zveno)

20-118-5-27/59

gate whether there is any interaction of substituents strongly different according to their nature (for instance of the  $\text{NO}_2$  and  $\text{NH}_2$  groups) at the opposite ends of the molecules, and if there is any, in what way it takes place. In this context not the previously investigated biphenyl derivatives are dealt with, but such compounds where the benzene cycles are not connected directly but are isolated from each other by a separating member. Though the interaction of the benzene cycles of the last-mentioned substances by a methylene bridge was stated (references 4 - 10) other authors maintained that the grey bridge of the aromatic sulfides must not be regarded as the agent of the conjugation (reference 13). The present paper is devoted to the chemical investigation of the problem mentioned above. The kinetics of the acylation reaction of 4-amino-diphenyloxide, 4-amino-4'-nitrophenyloxide, and of the corresponding sulfides by means of p-nitrobenzoylchloride in a benzene solution is described. The measuring methods for the velocity of this reaction were improved (compared to reference 14). The bimolecular velocity constants (k), the energy (E) and the entropy ( $\Delta S$ ) of the activation, and the frequency factor (PZ) were computed according to the methods described before (referen-

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On the Interaction Between Separated Atomic Groups Through a  
System of Two Benzene Nuclei Connected by a Bridge (mostikovoye  
zveno)

20-112-5-27/59

ces 2,3). The numerical results for each investigated reaction are compiled in table 1. They show that contrary to the phenyl group which has a very weak electron absorbing power, the  $C_6H_5O$  group has rather a perceptible electron emission action. The analogous  $C_6H_5S$  group on the other hand has quite an electron absorbing nature, in spite of the fact that its introduction into the para position of the aniline molecule retards the acylation velocity almost by the fivefold. The authors propose a term "f" which would denote a relation of the velocity constants for reactions of the substituted and non-substituted compound. "f" shows how the reaction velocity is modified by the effect of the respective substituent on the reacting group. The comparison of the molecular systems of diphenyloxide and of diphenylsulfide surprisingly showed that the interaction of the substituents  $NO_2$  and  $NH_2$  at the transition from the biphenyl system to the systems of diphenyloxide and of the corresponding sulfide was not only not decreased, but in the case of the compound con=

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20-118-5'-27/59

On the Interaction Between Separated Atomic Groups  
Through a System of Two Benzene Nuclei Connected by a  
Bridge (mostikovoye zveno)

taining O, was a little increased, and was perceptibly in-  
creased in the molecule of the diphenylsulfide derivate.  
Thus the O and S atoms do not act as insulators for electron  
effects if they push apart 2 benzene nuclei. At present the  
explanation is not easy. Frequently used methods of optical  
investigation often lead to contradictory results. These con-  
tradictions between the results of the chemical and the opti-  
cal methods cannot be ascribed to any errors of these methods.  
This is only a pseudo-contradiction. All methods must be applied  
in this case.

There are 1 table, and 18 references, 11 of which are Soviet.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet im. A. M. Gor'kogo  
(State University imeni A. M. Gor'kiy, Khar'kov)

PRESENTED: October 8, 1957, by B. A. Kazanskiy, Academician.

SUBMITTED: December 1, 1956.

Card 4/4

5(3)

## AUTHORS:

Litvinenko, L. M., Levchenko, N. F.,  
Tsukerman, S. V., Cheshko, R. S.

SOV/79-29-5-13/75

## TITLE:

On the Reduction of Nitro Derivatives of Diphenyl Methane With  
Alkali Sulfides (K voprosu o vosstanovlenii nitroprodukov  
difenilmetana sernistymi shchelochami)

## PERIODICAL:

Zhurnal obshchey khimii, 1959, Vol 29, Nr 5, pp 1470-1474 (USSR)

## ABSTRACT:

Recently the problem mentioned in the title was discussed in the dissertation of R. S. Tsekhanskiy (Ref 11). It was stated that 4-amino-4'-nitro-diphenyl-methane (I) with a melting point of  $246^{\circ}$  is formed by treating 4,4'-dinitro-diphenyl-methane with sodium sulfhydrate in aqueous alcohol solution. The authors found that not only (I) is formed there but also another substance with a melting point of  $178^{\circ}$  (II). Due to its bad solubility in alcohol it can be easily separated from the first substance. The investigation of the physical properties of (I) indicated that it is not 4-amino-4'-nitro-diphenyl-methane. It is of great importance for the clarification of the structure that 4,4'-diamino-diphenyl-methane can be transformed into 4,4'-diamino-benzophenone by treatment with alkali sulfides (Ref 18). It may be assumed that on interaction of the alkali

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On the Reduction of Nitro Derivatives of Diphenyl Methane      SOV/79-29-5-13/75  
With Alkali Sulfides

sulfide with 4,4'-dinitro-diphenyl-methane two processes take place: reduction of nitro groups to amino groups and transformation of the methyl groups to carbonyl groups. (I) really proved to be identical with the known 4,4'-diamino-benzophenone, which is obtained according to a method described in publications (Ref 21). 4,4'-diamino-benzophenone was found to be obtained more readily and in fair yield by treating 4,4'-dinitro-diphenyl methane with sodium disulfide in aqueous methanol. This method can be used as a new and convenient method for synthesizing this diamine. After the clarification of the structure of (I) it is no more difficult to confirm the structure of (II). By potentiometric titration with nitrite (II) was proved to be a monoamine. According to its melting temperature and other physical properties it is identical with 4-amino-4-nitro-benzophenone (Ref 22). Its definite structure was confirmed by its reduction with hydrazine hydrate in the presence of Reney nickel to 4,4'-diamino-benzophenone. By the influence of sodium disulfide upon 4-amino-diphenyl methane, also under more rigorous conditions than with the reduction of 4,4'-dinitro-diphenyl methane only 4-amino-diphenyl methane is obtained, i.e. no noticeable transformation of the methylene group into a carbonyl group takes place there. There are 24 references,

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On the Reduction of Nitro Derivatives of Diphenyl Methane    SOV/79-29-5-13/75  
With Alkali Sulfides

18 of which are Soviet.

ASSOCIATION:    Khar'kovskiy gosudarstvennyy universitet (Khar'kov State University)

SUBMITTED:    May 4, 1958

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S/079/60/030/04/70/080  
B001/B011

AUTHORS: Lavrushin, V. F., Tsukerman, S. V., Shmayeva, T. M.

TITLE: Spectra and Halochromism of Di-(2-dimethylamino-5-pyridyl)-methane

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 4, pp. 1356-1359

TEXT: It had been often pointed out in publications that a coloration occurs also with the dissolution of some aromatic methane derivatives (Refs. 6-9) in  $H_2SO_4$ . The authors of the present paper succeeded in ascertaining that the reaction of the aromatic methane derivatives with strong protonic acids likewise occurs as an acid-basic reaction, as a consequence of which the corresponding carbonium salts are formed (Scheme 2). The occurrence of a coloration in the dissolution of di-(2-dimethylamino-5-pyridyl)-methane in hot concentrated  $H_2SO_4$ , as well as its vanishing when diluting with water, is indicative of the halochromic nature of this phenomenon, i.e. of the formation of a carbonium salt. Carbonium salt from the given heterocyclic compound may occur in two directions: 1) by cleavage of the molecule of the hetero-

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Spectra and Halochromism of Di-(2-dimethylamino-5-pyridyl)-methane

S/079/60/030/04/10/080  
B001/B011

cyclic derivative on the methane bond, and 2) by oxidation of this compound into the corresponding carbinol and subsequent salt formation reaction. In order to establish the true cause giving rise to the formation of the coloration, the authors made a spectrophotometric investigation of this phenomenon. The determination of the absorption spectra of alcoholic and sulfuric acid solutions of 2-dimethylamino-5-pyridyl carbinol, of di-(2-dimethylamino-5-pyridyl)-carbinol and di-(2-dimethylamino-5-pyridyl)-methane revealed that the absorption spectrum of the acid solution of the first compound (Fig. 1) differs little from the one of its alcoholic solution, whereas for the second compound (Fig. 2) there is a considerable difference between the curves of the acid and the alcoholic solution. There is a considerable difference also between the curves of heterocyclic methane derivative (Fig. 3). Thus, the occurrence of a red coloration on the dissolution of the above methane in hot sulfuric acid is to be explained by the formation of a dipyridyl carbonium salt (last scheme). There are 4 figures and 14 references, 8 of which are Soviet.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet (Khar'kov State University)

Card 2/3

LAVRUSHIN, V.F.; TSUKERMAN, S.V.; NIKITCHENKO, V.M.

Synthesis of some unsaturated ketones containing a thiophene ring. Ukr.khim.zhur. 27 no.3:379-384 '61. (MIRA 14:11)

1. Khar'kovskiy gosudarstvennyy universitet im. A.M.Gor'kogo.  
(Ketones)  
(Thiophene)

LAVRUSHIN, V.F.; TSUKERMAN, S.V.; SYROVATKA, I.G.

Spectra and halochromism of thiophene analogues of triphenyl-  
and diphenylcarbinol. Zhur. ob. khim. 31 no.4:1275-1278 Ap '61.  
(MIRA 15:4)

1. Khar'kovskiy gosudarstvennyy universitet.  
(Alcohols—Spectra)

LAVRUSHIN, V.F.; TSUKERMAN, S.V.; ARTEMENKO, A.I.

Syntheses of unsaturated ketones containing a furan ring.  
Zhur.ob.khim. 31 no.9:3037-3040 S '61. (MIRA 14:9)

1. Khar'kovskiy gosudarstvennyy universitet imeni A.M.Gor'kogo.  
(Ketones) (Furan)

LAVRUSHIN, V.F.; TSUKERMAN, S.V.; NIKITCHENKO, V.M.

Synthesis of thiophene analogs of di- and trimethoxychalcones and  
their vinyl analogs. Zhur.ob.khim. 31 no.9:2845-2850 S '61.  
(MIRA 14:9)

1. Khar'kovskiy gosudarstvennyy universitet imeni A.M.Gor'kogo.  
(Chalcone) (Thiophene)

LAVRUSHIN, V.F.; ~~TSUKERMAN, S.V.~~; ARTEMENKO, A.I.

Synthesis of nitro derivatives of  $\alpha,\beta$ -unsaturated ketones containing benzene and furan rings. Zhur.ob.khim. 32 no.4:1324-1329 Ap '62. (MIRA 15:4)

1. Khar'kovskiy gosudarstvennyy universitet.  
(Ketones) (Furan) (Nitro compounds)

LAVRUSHIN, V.F.; TSUKERMAN, S.V.; ARTEMENKO, A. I.

Synthesis of nitrofurans analogs of methoxychalcones and their  
vinyls. Zhur.ob.khim. 32 no.4:1329-1331 Ap '62.

(MIRA 15:4)

1. Khar'kovskiy gosudarstvennyy universitet imeni A.M.Gor'kogo.  
(Chalcone) (Furan)

TSUKERMAN, S.V.; NIKITCHENKO, V.M.; LAVRUSHIN, V.F.

Synthesis of nitro derivatives of  $\alpha, \beta$ -unsaturated ketones  
containing benzene and thiophene rings. Zhur.ob.khim. 32  
no.7:2324-2330 JI '62. (MIRA 15:7)

1. Khar'kovskiy gosudarstvennyy universitet imeni A.M.Gor'kogo.  
(Ketones) (Benzene) (Thiophene)

TSUKERMAN, S.V.; GINTSE, I.K.; LAVRUSHIN, V.F.

Spectra and halochromism of  $\alpha\beta$ -unsaturated ketones containing furan and thiophene rings! Zhur. ob. khim. 34 no.7: 2317-2321 JI '64 (MIRA 17:8)

1. Khar'kovskiy gosudarstvennyy universitet imeni A.M.Gor'kogo.

TSUKERMAN, S.V.; CHAN KUOK SHON; LAVRUSHIN, V.F.

Synthesis of chalcane analogs based on 2-acetylquinoline. Zhur.  
ob. khim. 34 no.9.2881-2886 S '64. (MIRA 17:11)

1. Khar'kovskiy gosudarstvennyy universitet.

TSUKERMAN, S.V.; ORLOV, V.D.; LAVRUSHIN, V.F.; YUR'YEV, Yu.K.

Synthesis of selenophene analogs of chalcones. Zhur. org.  
khim. 1 no.4:650-653 Ap. '65. (MIRA 18:11)

1. Khar'kovskiy gosudarstvennyy universitet imeni Gor'kogo  
i Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

ACC NR: AP6023581

SOURCE CODE: UR/0409/66/000/003/0387/0389

AUTHOR: Taukerman, S. V.; Izvekov, V. P.; Lavrushin, V. P.

ORG: Kharkov State University (Khar'kovskiy gosudarstvennyy universitet)

TITLE: Synthesis of the 4- and 5-nitropyrrole derivatives, analogs of chalcones

SOURCE: Khimiya geterotsiklicheskih soyedineniy, no. 3, 1966, 387-389

TOPIC TAGS: nitropyrrole derivative, chalcone analog, physiologically active compound, *CHEMICAL SYNTHESIS, PHENYL COMPOUND*

ABSTRACT: In a search for new physiologically active compounds, 10 chalcone analogs, with general formulas: where R is phenyl (I-III), 4-methoxyphenyl (IV-VI), 4-nitrophenyl (VII-IX), and 2-pyrryl (X), were prepared by the Claisen-Schmidt condensation of 4- and 5-nitropyrrole-2-aldehyde with 2-acetylpyrrole, 2-acetylthiophene, or 2-acetylphenone. Equimolar amounts of the reagents in ethanol are treated dropwise with 3-4 mls. 15% NaOH and the mixture is heated under reflux on a water bath for 2-10 hr. Yields, composition, and mp of the nitropyrrole analogs of chalcone and their 2,4-dinitrophenylhydrazones are given in the table. [WA-50; CBE No. 11]

SUB CODE: 07/ SUBM DATE: 21Oct64/ ORIG REF: 003/ OTH REF: 006/

Card 1/1

UDC: 547.741+542.953

TSUKERMAN, S.V.; CHAN KUOK SHON; LAVRUSHIN, V.F.

Halochromism of quinoline analogs of chalcone with electron-donor substituents. Zhur. ob. khim. 35 no.10:1723-1729 O '65.  
(MJRA 18:10)

1. Khar'kovskiy gosudarstvennyy universitet imeni A.M. Gor'kogo.

TSUKERMAN, S.V.; KUTULYA, L.A.; SUROV, Yu.N.; LAVRUSHIN, V.F.; YUR'YEV,  
Yu.K.

Basicity of furan, thiophene, and selenophene analogs of chalcone.  
Dokl. AN SSSR 164 no.2:354-356 S '65. (MIRA 18:9)

1. Khar'kovskiy gosudarstvennyy universitet im. A.M. Gor'kogo i  
Moskovskiy gosudarstvennyy universitet. Submitted March 1, 1965.

TSUKERMAN, S.V.; ARTEMENKO, A.I.; LAVRUSHIN, V.F.

Dipole moments of furan analogs of chalcene and their vinyl  
analogs. Zhur. ob. khim. 34 no.11:3591-3597 N '64 (MIRA 18:1)

1. Khar'kovskiy gosudarstvennyy universitet imeni Gor'kogo.

TSUKERMAN, S.V.; KUTULYA, L.A.; LAVRUSHIN, V.F.

Spectra and halochronism of dibenzylidenecycloalkanones and  
their thiophene and furan analogs. Zhur. ob. khim. 34 no.11:  
3597-3605 N '64 (MIRA 18:1)

1. Khar'kovskiy gosudarstvennyy universitet imeni Gor'kogo.

TSUKERMAN, S.V.; ARTEMENKO, A.I.; LAVRUSHIN, V.F.; ROZUM, Yu.S.

Infrared spectra of furan analogs of chalcone and their  
vinyl analogs. Zhur. ob. khim. 34 no.7:2309-2317 J1 '64  
(MIRA 17:8)

1. Khar'kovskiy gosudarstvennyy universitet imeni A.M. Gor'kogo  
i Institut organicheskoy khimii AN UkrSSR.

TSUKERMAN, S.V.; CHAN KUOK SHON; LAVRUSHIN, V.F.

Synthesis of  $\alpha\beta$ -unsaturated ketones based on quinaldehyde.  
Zhur. ob. khim. 34 no. 3:832-837 Mr '64. (MIRA 17:6)

1. Khar'kovskiy gosudarstvennyy universitet imeni A.M.Gor'kogo.

TSUKERMAN, S.V.; KUTULYA, L.A.; NIKITCHENKO, V.M.; LAVRUSHIN, V.F.

Basicity and structure of  $\alpha, \beta$ -unsaturated heterocyclic ketones.  
Part 1: Basicity of the thiophene analogs of chalcone. Zhur.ob.  
khim. 33 no.10:3180-3186 0 '63.

Basicity and structure of  $\alpha, \beta$ -unsaturated heterocyclic ketones..  
Part 2: Thiophene analogs of 1,5-diphenylpentadienones. 3186-  
3191 (MIRA 16:11)

1. Khar'kovskiy gosudarstvennyy universitet imeni A.M.Gor'kogo.

TSUKERMAN, S.V.; GINTSE, I.K.; LAVRUSHIN, V.F.

Synthesis of unsaturated ketones containing furan and thiophene rings. Zhur.ob.khim. 33 no.7:2383-2387 J1 '63. (MIRA 16:8)

1. Khar'kovskiy gosudarstvennyy universitet imeni A.M.Gor'kogo.  
(Ketones) (Thiophene) (Furan)

TSUKERMAN, S.V.; NIKITCHENKO, V.M.; LAVRUSHIN, V.F.

Spectra and halochromism of mononitro derivatives of thiophene  
analogs of chalcone and dibenzalacetone. Zhur.ob.khim. 33 no.4:  
1255-1260 Ap '63. (MIRA 16:5)

1. Khar'kovskiy gosudarstvennyy universitet imeni A.M.Gor'kogo,  
(Butenone—Spectra) (Nitro compounds)  
(Halochromism)

LAVRUSHIN, V.F.; TSUKERMAN, S.V.; ARTEMENKO, A.I.

Absorption spectra and halochromism of furan analogs of  
methoxychalcones and their vinyl analogs. Zhur.ob.khim.  
33 no.3:878-883 Mr '63. (MIRA 16:3)

1. Khar'kovskiy gosudarstvennyy universitet imeni  
A.M. Gor'kogo.

(Furan—Absorption spectra)  
(Chalcone) (Halochromism)

NIKITCHENKO, V.M.; TSUKERMAN, S.V.; LAVRUSHIN, V.F.

Spectra and halochromism of nitromethoxy- and dinitro derivatives  
of the thiophene analogs of chalcone. Zhur. ob. khim. 33 no.8:  
2563-2568 Ag '63. (MIRA 16:11)

1. Khar'kovskiy gosudarstvennyy universitet imeni A.M. Gor'kogo.

ARTEMENKO, A.I.; TSUKERMAN, S.V.; LAVRUSHIN, V.F.

Absorption spectra and halochromy of nitromethoxy and dinitro derivatives of furan analogs of chalcone and its vinyl analogs. Zhur.ob.khim. 34 no.2: 487-492 F '64. (MIRA 17:3)

1. Khar'kovskiy gosudarstvennyy universitet imeni A.M.Gor'kogo.

LAVRUSHIN, V.F.; TSUKERMAN, S.V.; ARTEMENKO, A.I.

Absorption spectra and halochromy of furan analogs of chalcone  
and their vinyl analogs. Zhur.ob.khim. 32 no.8:2551-2556  
Ag '62. (MIRA 15:9)

1. Khar'kovskiy gosudarstvennyy universitet im. A.M. Gor'kogo.  
(Chalcone--Spectra) (Furan)

LAVRUSHIN, V. F.; TSUKERMAN, S. V.; NIKITCHENKO, V. M.

Spectra and halochromy of thiophene analogs of methoxychalcones  
and their vinyl analogs. Zhur. ob. khim. 32 no.12:3971-3977  
D '62. (MIRA 16:1)

1. Khar'kovskiy gosudarstvennyy universitet imeni A. M.  
Gor'kogo.

(Chalcone—Spectra) (Thiophene—Spectra)  
(Halochromism)

LAVRUSHIN, V.F.; TSUKERMAN, S.V.; NIKITCHENKO, V.M.

Absorption spectra of the thiophene analogs of chalcone and  
their vinyl analogs. Zhur.ob.khim. 32 no.8:2677-2684, Ag '62.  
(MIRA 15:9)

/ . Kharkovskiy gosudarstvennyy universitet imeni A.M. Gor'kogo.  
(Thiophene-Spectra) (Chalcone)

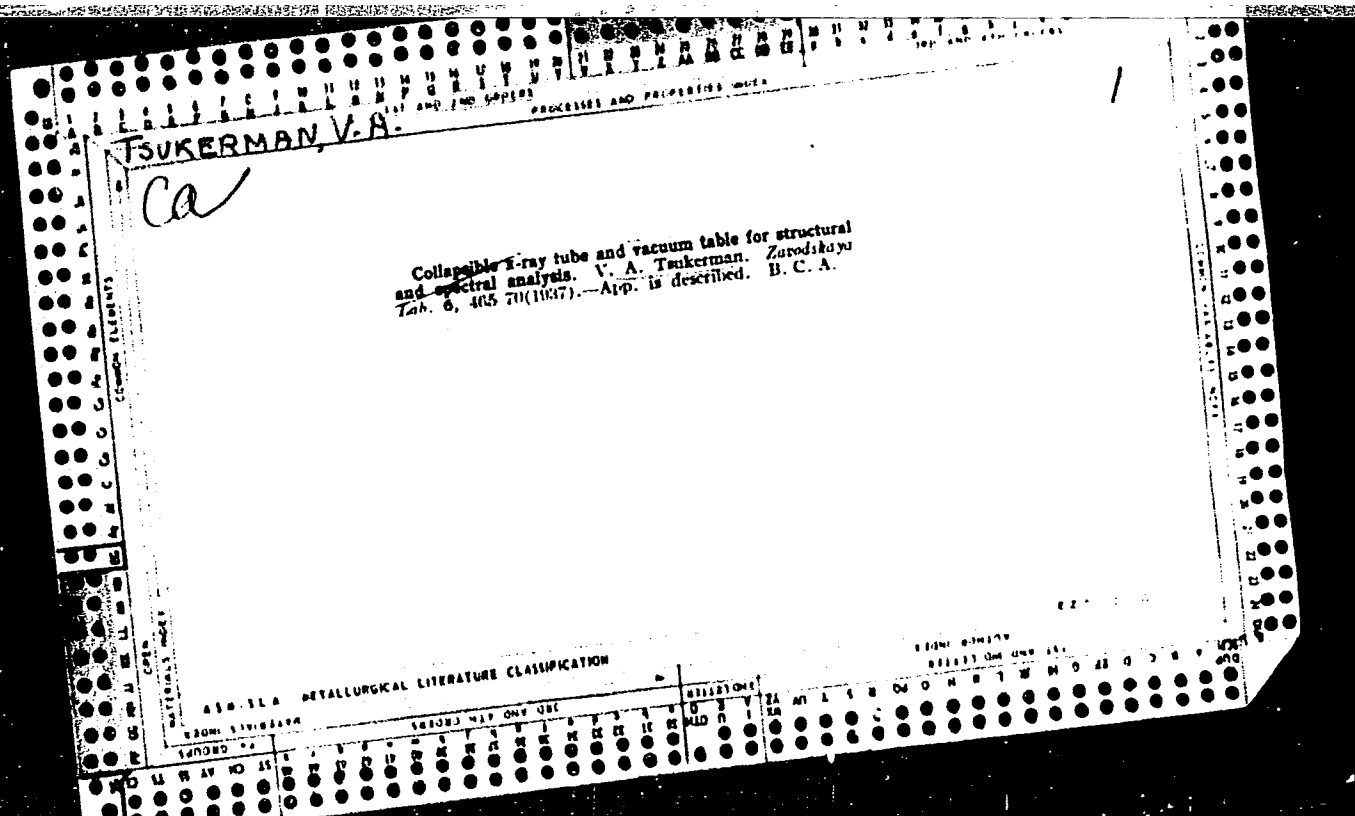
GORLOV, Ivan Panteleyevich; AVSEYENOK, A.F., otv.red.; TSUKERMAN, S.Ya.,  
red.isd-va; LOMILINA, L.N., tekhn.red.; SHKLYAR, S.Ya., tekhn.red.

[Coal preparation in the Polish People's Republic] Obogashchenie  
uglei v Pol'skoi Narodnoi Respublike. Moskva, Ugletekhizdat,  
1959. 47 p. (MIRA 12:6)  
(Poland--Coal preparation)

TSUKERMAN, V.

Leather coating colors and their use. V. Tsukerman and R. Melitskaya. *Kosherennoe Obozreniye* 17, No. 3, 38-41 (1948); *Chemie & Industrie* 41, 347. The best way of increasing the fastness to water of casein colors is to treat them with  $\text{CH}_2\text{O}$ . The thickness of the film is of considerable importance; the thinner it is, the better it will adhere to the leather and resist wet rubbing. A suitable fixing agent is a casein-egg albumin mixt. contg 2.5% total solids and 5%  $\text{CH}_2\text{O}$ . A. Papineau Conture

ASAC 55.4 METALLURGICAL LITERATURE CLASSIFICATION



*As 26.*

*Apparatus for rapid X-ray structure tests and X-ray motion  
pictures. L. V. Altshuler and Y. A. Zukerman (Zurich. Lab., 1939,  
8, 449-458). J. J. H.*

**Taukerman, V.A.**

M

**Apparatus for Rapid X-Ray Structure Investigations at High Temperatures  
V. A. Taukerman (Zavol. Lab., 1940, 8, (10), 1115-1116).—[In Russian].  
Descriptive.—N. A.**

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

ZAVOL. LAB.

OPEN MATERIALS INDEX

PERIODICALS ONLY INDEX

CROSS REFERENCE INDEX

12

**TSUKERMAN, V. A.**

*M*

\*Obtaining X-Ray Photographs with Very Short Exposure Times. V. A. Tsukerman and A. I. Avchenko (Zhur. Tekhn. Fiz., 1942, 18, (4/5), 183) [In Russian.] Methods of obtaining X-ray photographs with exposures lasting  $10^{-8}$  to  $10^{-9}$  sec. are reviewed. It is shown that by using an ordinary kenotron instead of an X-ray tube, it is possible to obtain X-ray photographs of simple objects using a standard X-ray set by exposures lasting a few microseconds.—N. A.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

SECTION 1: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

SECTION 2: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

SECTION 3: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

SECTION 4: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

ZUKERMAN, V. A.

Mbr., X-Ray Lab., Inst. Mechanics, Dept. Tech. Sci., Acad. Sci., -1946-.

"Radiography of Explosion and Detonation Processes," Dok. AN, 40, No. 7, 1943;

"A Combined Method for Photographing Very Rapid Processes," ibid., 53, No. 4, 1946.

TSUKERMAN, V. A.

"Use of Micro-Second Roetngenograph for Studying the Phenomenon of Blasting and Explosions," a report presented at the sessions of the General Assemblies of GFTI in 1944.

IAN-Ser Fiz, Vol 9, No 3, 1945

BC

1231. Combined method for photographing very rapid processes.  
V. A. Zubovskiy (Compt. rend. Acad. Sci. U.R.S.S., 1948, 68,  
319-321).—A method combining spark and X-ray photography  
simultaneously is described. It has been used to investigate the  
passage of a bullet through a glass plate. The spark photograph  
shows up the gases produced by the explosion in the rifle, but these  
are absent from the X-ray photograph, which, on the other hand,  
gives a better picture of the shape of the bullet and the deformation  
of the glass at different stages. Photographs of exploding materials  
have also been obtained. A. J. M.

1ST AND 2ND ORDER POWERS AND PROPERTIES INDEX

100 AND 4TH ORDER

COMMON ELEMENTS

COMMON VARIANTS INDEX

177

517

778.37:778.33 - 82

2369

Methods of synchronization for very brief X-ray exposures. STRAKHOVICH, O. M., AND TRAKHMAN, V. A. *Bull. Acad. Sci. USSR, Div. Sci. Tech.* (NO. 3) 371-84 (1966) In Russian.—Various methods are discussed which permit X-ray photography of *pass* processes, such as passage of a bullet through a target, and the explosion of lead azide. D. S.

ASM-A1A METALLURGICAL LITERATURE CLASSIFICATION

RIGHT BOUNDARY

100 AND 4TH ORDER

COMMON VARIANTS INDEX

COMMON ELEMENTS

1ST AND 2ND ORDER POWERS AND PROPERTIES INDEX

100 AND 4TH ORDER

TSUKERMAN, V. A.

№-1

Photoballistic method of measurement of very short light flashes. V. A. Tsukerman. *Bull. acad. sci. U.R.S.S., Classe sci. tech.* 1946/863-74 (in Russian).--(1) The method of measuring light flashes of the order of  $10^{-7}$  to  $10^{-8}$  sec., such as those occurring in detonation, consists in illuminating a flying bullet, fired at a known and reproducible initial velocity, from two consecutively flashing sources, at a distance  $s$  from each other, through an opening of width  $a$  in a screen, and photographing the shadow of the bullet on a plate placed at a distance  $f$  from the source and a distance  $b$  behind the screen. With  $s/f = a/b$ , two images of the bullet are obtained one above the other; from their displacement and the velocity of the bullet the time interval between the two flashes can be obtained; the duration of each flash can be inferred from the blur of the image in the direction of the motion. Insertion of mirrors in the path of the light from the sources permits reducing their distance at will and thus recording flashes following one another closely in neighboring consecutive sections of a detonating column. Accuracy is limited by the static blur, amounting to about 0.5 mm., which has to be subtracted from the blur measured; with an initial bullet speed of 610 m./sec., the error in time may be 0.5-0.6 microsec.; an accuracy of  $1 \times 10^{-7}$  sec. can, however, be attained with an initial speed of 2700 m./sec., diam. of source 1-2 mm. (diaphragms), estn. of the blur within 0.1-0.2 mm. (2) Applications

are described in the measurement of the time lag,  $t$ , in spark initiation and the duration  $\tau$  of the detonation flash of 98-99% pure  $\text{PbN}_2$  of 0.05 mm. grain size, bulk d. 0.7-0.8 g./cc., pressed (500 kg./sq. cm.) d. 2.2-2.4 g./cc. With bulk  $\text{PbN}_2$ , free surface and in glass tube,  $t \approx 2.0$  and  $2.2$ ,  $\tau \approx 1.1$  and  $1.3$  microsec., resp.; pressed azide,  $t \approx 4.5$ ,  $\tau \approx 2.1$  microsec.; however, on screening the 15-20 mm. high luminous column appearing in the latter case,  $t$  is reduced to 4.2,  $\tau$  to 1.2 microsec. By deducting from the exptl.  $t$  the time necessary for the detonation to travel through a thickness of 4-6 mm. (0.8-1.2 microsec. at 5000 m./sec.), there remains an unaccounted for 1-3 microsec. which consequently represents a real time lag between initiation and beginning detonation and cannot but correspond to a build-up of the explosive reaction in the  $\text{PbN}_2$  crystals. Similar measurements of  $t$  and  $\tau$  permitting estn. of the velocity of detonation were made on an azide-tetryl capsule detonator. (3) The change of intensity of a light flash with time was detd. by differentiation of the photometric curves plotted against the shift of the image of the bullet. The luminous intensity rises sharply in the beginning of the detonation, reaches a max. in about 1 microsec. and decays rapidly; with  $\text{PbN}_2$ , the duration of max. luminosity is about 1.2 microsec. for a total duration of the flash of about 3 microsec. N. Thor

Inst. Mech. Eng., AS USSR

TSUKERMAN, V. A.

"A Combined Method for Photographing Very Rapid Processes," Dok AN, 53, No 4,  
1946. X-Ray Lab., Inst. of Mech. Engr., Acad Sci, USSR

AUTHOR:

TITLE:

PERIODICAL:

ABSTRACT:

TSUKERMAN, V.A., MANAKOVA, M.A.

PA - 2140

The Sources of the Short X-Ray Flash for the Investigation of Rapidly Developing Processes. (Istochniki korotkikh rentgenovskikh vspyshek dlya issledovaniya bystroprotekayushchikh protsessov, Russian).

Zhurnal Tekhn.Fiz.1957, Vol 27, Nr 2, pp 391-403 (U.S.S.R.)  
Received: 3 / 1957

Reviewed: 4 / 1957

In the course of recent years the authors of the present work developed acutely focal impulse X-ray tubes for taking X-ray pictures of high-speed processes. Principles with respect to method and construction were developed which make it possible to obtain intense X-ray flashes of short duration at voltages of from 1000 to 2000 kV. The following suggestions were made and realized: Systems for the multiple radiography of successive phases of development of a high-speed process with microsecond-intervals between individual X-ray flashes. In the present work the results obtained are described in short. First, the impulse X-ray tubes with an anode in form of a needle are described. The basic condition upon which development of this tube was based was the concentration of electron flux on a relatively small anode surface. This problem was solved in 1949, and now the scheme of this solution is shown. Its two main features are: The anode had the shape of a needle, and the simple two-electron system was used. In

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The Sources of the Short X-Ray Flash for the Investigation of  
Rapidly Developing Processes.

order to be able to form an idea of the dimensions of the focal spot a series of pictures was taken with the aid of hole-chambers. Some of the pictures are attached. It was a complicated technical problem to decide upon the construction and the material of the insulator which must stand up to considerable impulse-voltages. The best characteristics were found in the case of insulators made from organic glass. In the second part of the paper the schemes and systems for the multiple radiography of high-speed processes are described and illustrated. Besides, several X-ray pictures are added for the purpose of better illustration. The following conclusions are drawn: 1) The impulse X-ray tube with needle-shaped anode is a simple two-electron discharger the initial phase of which for breakdown, causes an intense X-ray radiation from the lateral surface of the anode needle. With such an electrode geometry the effective focus has a diameter of from  $1.5$  to  $2.5 \cdot 10^{-7}$  sec.

2) Shifting of the needle towards the interior of the long cathode cylinder makes it possible to use cylindrical glass insulators for the insulation of the anode. The inductive division of voltage along the generatrix of the glass cylinder reduces

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The Sources of the Short X-Ray Flash for the Investigation of Rapidly Developing Processes.

its length up to 50 cm in the case of voltages of the current pulse of from 1000 to 1400 kV.

3) With the help of systems for four-fold and eight-fold radiography it is possible to record the successive phases of the development of explosion processes and other high-speed processes. (10 illustrations).

ASSOCIATION: Institute for Chemical Physics of the Academy of Sciences of the U.S.S.R., Moscow

PRESENTED BY:

SUBMITTED: 28.6.1956

AVAILABLE: Library of Congress

Card 3/3

SOV-120-58-1-21/43

AUTHORS: Zyuzin, V. P., Marakova, M. A. and Tsukerman, V. A.

TITLE: Sealed, Sharp Focus, Pulsed X-ray Tubes (Zapayannyye ostrofokusnyye impul'snyye rentgenovskiye trubki)

PERIODICAL: Pribery i Tekhnika Eksperimenta, 1958, Nr 1, pp 84-87 (USSR)

ABSTRACT: In the development of the sharply focussed sealed, pulsed X-ray tube described in the present paper, the following three features given in Ref.(7) were incorporated: (1) the working inter-electrode distance is formed by a tungsten anode in the form of a needle and a cathode tube with sharpened edges. The X-ray pulse is formed in the initial stage of the discharge across this gap. The radiation travels down the axis of the instrument through the cathode tube. With such a geometry the diameter of the focal spot practically does not exceed the diameter of the anode needle; (2) the gap across which the discharge takes place is near to the closed end of the earthed cathode tube. This prevents the deposition of anodic metal on the tube insulation. The diameters of the cathode tube and the holder of the anode needle are chosen so that the gradients near the cathode are insufficient to cause a discharge when short, high voltage pulses are applied; (3) in order to obtain a uniform

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SOV-120-58-1-21/43

Sealed, Sharp Focus, Pulsed X-ray Tubes.

distribution of potential down the relatively short glass insulator, an inductive voltage divider is used. A section through the tube is shown in Fig.1 and a photograph in Fig.2. The cathode cylinder is made of copper and has an internal diameter of 80 mm depending on the use to which the tube is to be put. its length is between 420 mm and 900 mm (cf Fig.2). The end of the cylinder is covered with a copper disc, at the centre of which a steel cathode tube, K, is attached (Fig.1). The internal diameter of the cathode tube is 20 mm. In order to reduce the absorption in the window, O, the thickness of this window is 0.8 mm. The diameter of the anode is 3 mm. The distance between the end of the anode and the sharpened edges of the cathode tube is 9-11 mm. The anode holder is made of duralumin or nickel and has an outer diameter of 10 mm. The inductive voltage divider which produces a uniform distribution of potential down the glass cylinder is in the form of a copper wire wound on the outside of the cylinder on a suitable insulation. The tube is evacuated down to  $(2-3)10^{-5}$  mm Hg but this is reduced during the operation of the tube by a factor of 10-100 due to the

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SOV-120-58-1-21/43

Sealed, Sharp Focus, Pulsed X-ray Tubes.

evaporation of tungsten which acts as a getter. The diameter of the focal point was about 3 mm and the duration of the X-ray pulse was about  $2 \times 10^{-7}$  sec. The intensity of the X-ray beam is constant to within  $\pm 20\%$ . There are 3 figures, no tables and 9 references, of which 3 are Soviet, 4 English and 2 German.

SUBMITTED: June 24, 1957.

1. X-ray tubes--Design
2. X-ray tubes--Performance
3. X-ray tubes--Materials

Card 3/3

SOV/56-34-3-10/55

AUTHORS: Samylov, S. V. , Tsukerman, V. A. , Model', I. Sh.

TITLE: The Glow of Gases Irradiated by Soft X-Rays (Svecheniye gazov pod deystviyem myagkogo rentgenovskogo izlucheniya)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958 , Vol. 34, Nr 3, pp. 599 - 608 (USSR)

ABSTRACT: The purpose of this work is a more detailed investigation of the glow of gases and metals under the action of soft X-rays. The authors explained the dependence of the intensity of the glow on the type and on the pressure of the gas and they also obtained some data on the mechanism of the transformation of the X-rays into visible light. First the experimental method is discussed in detail. A diagram illustrates the results of the first measurements and of the intensity of the glow as a function of the air pressure for Be, Cu, Mo, Sn, and Pt. These measurements were made by a photoelectronic multiplier. The absolute yield of light increases with increasing atomic number of the metal. When the pressure is reduced from 760 to 7 to 10 mm Hg.

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SOV/56-34-3-10/55

The Glow of Gases Irradiated by Soft X-Rays

the intensity of the glow increases in most of the metals. A further diminution of the pressure leads to a monotonous decrease of the intensity. At pressures of about  $10^{-2}$  mm mercury column and below the photoelectronic multiplier with the maximum amplification records no noticeable yield of light. These unexpected results showed that the observable glow is not connected with the fluorescence of the metals under the action of X-rays. It was supposed that the glow of the gas in the chamber is excited by such electrons which are knocked out of the metallic surface and of the atoms of the gas according to the photoeffect by the Roentgen quanta. The added photographs of the glow in the air of the chamber prove this assumption. A further proof for the electronic nature of the excitation of the glow in gas when irradiated by X-rays resulted from photographing the glow of the air in a magnetic field. The arrangement of this experiment is illustrated by a figure. Further diagrams among others illustrate the following: The dependence of the intensity of the glow of air and argon on the pressure in case of absence of a metallic surface in the chamber, the pressure dependence of the intensity of the glow of a mixture of 80 % Ar + 20 % O<sub>2</sub>, the results of the microphotometric

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SOV/ 56-34-3-10/55

The Glow of Gases Irradiated by Soft X-Rays

evaluation of the spectrogram of the glow of argon at atmospheric pressure. The last paragraph gives a detailed discussion of these results. The following can be assumed as proved: In case of energies of the ionizing radiation, by far, surmounting the ionization potential of the gas, the glow occurs as a consequence of electron transfers and it is essentially determined by the atomic and molecular properties of the gas, by its density and its admixtures. Finally the authors draw some practical conclusions from the here described experiments; these conclusions are of interest for working with gas-scintillators. There are 9 figures, 1 table, and 17 references, 5 of which are Soviet.

SUBMITTED: October 10, 1957

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24.1200,16.7600,24.2100,  
-24.2120,24.2500,5.3610

76966  
SOV/56-37-6-6/55

AUTHORS: Brish, A. A., Tarasov, M. S., TSukerman, V. A.

TITLE: Electrical Conductivity of the Explosion Products of  
Condensed Explosives

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki,  
1959, Vol 37, Nr 6, pp 1543-1550 (USSR)

ABSTRACT: The electrical conductivity of the explosion products  
of trinitrotoluene + hexogen (1:1 by weight mixture)  
melt and powdered mixture, hexogen (powder), tri-  
nitrotoluene (powder), 2,4,6-trinitrophenyl-methylnitramide,  
and lead azide was investigated by the electrical con-  
tact and electromagnetic methods. Near the wave front  
the conductivity of the explosives lies between  $0.1$   
 $\Omega^{-1}\text{cm}^{-1}$  and  $6\Omega^{-1}\text{cm}^{-1}$ . With an increase in the distance  
from the front, the conductivity of the explosion products  
decreased. The conductivity increased with the increase  
in the density of the explosives and the intensity of  
the detonation wave. It is proposed that besides thermal

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Electrical Conductivity of the Explosion  
Products of Condensed Explosives

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SOV/56-37-6-6/55

ionization the high values of the electric conductivity may be related to the high densities and pressures appearing at the front of the detonation wave. K. K. Krupnikov and G. M. Gandel'man participated in the experimental part of this work. There is a description (with two schematic diagrams) of the two methods of measuring the conductivity, 5 graphs, 1 table, and 5 Soviet references.

SUBMITTED: July 4, 1959

Card 2/2

5 (4), 2 (5)

AUTHORS:

Rivin, M. A. (Deceased), Zel'dovich, SOV/20-125-6-33/61  
Ya. B., Academician, Tsukerman, V. A., Sof'ina, V. V.,  
Beregovskiy, A. S.

TITLE:

Investigation of the Density Distribution in the Detonation  
Front of Gas Mixtures by the X-Ray-examination Method  
(Issledovaniye raspredeleniya plotnosti vo fronte detonatsii  
gazovykh smesey rentgenograficheskim metodom)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 6,  
pp 1292-1293 (USSR)

ABSTRACT:

The investigation mentioned in the title was begun in 1945,  
but had to be interrupted because of the illness and death of  
M. A. Rivin. It was resumed in 1957. The method employed in  
the present investigation uses a needle-shaped pulse tube  
(Ref 10) with zirconium anode as a source, and krypton, which  
is added to the detonating gas, as an absorbing medium. The  
characteristic radiation of zirconium ( $\lambda_{k\alpha} = 0.788 \text{ \AA}$ ) incides  
upon the absorption band of krypton. This combination made  
it possible to detect density variations in relatively thin  
layers of gas mixtures. The main result is that a thin layer

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Investigation of the Density Distribution in the Detonation Front of Gas Mixtures by the X-Ray-examination Method SOV/20-125-6-33/61

of gas, with a density that is from three to four times that of the original density, was found to exist in the front of the detonating wave. Figure 1 shows the density distribution in pure krypton and in the detonating wave of a mixture of detonating gas and krypton. The authors thank N. N. Orlova for her collaboration, Ye. I. Leont'yeva for taking part in the experiments of 1945, and R. M. Zaydel' for his assistance in carrying out calculations. There are 1 figure and 10 references, 4 of which are Soviet.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute for Chemical Physics of the Academy of Sciences, USSR)

SUBMITTED: February 16, 1959

Card 2/2

S/109/60/005/04/017/028  
E140/E435

AUTHORS: Razin, A.A., Tarasova, L.V. and Tsukerman, V.A.  
TITLE: Cine Microphotographs of Electrodes in the Pre-Breakdown Phase and in Electric Breakdown in High Vacuum *pl*  
PERIODICAL: Radiotekhnika i elektronika, 1960, Vol 5, Nr 4, pp 666-671 (USSR)  
ABSTRACT: This paper was presented at the 2nd All-Union Conference on Gas Electronics, October 1958.

Using microphotographs, it is shown that electrode surfaces in high vacuum change their microrelief both in the breakdown and in the pre-breakdown phase. A series of experiments was run with high contamination of the electrodes by deposition of oil in prolonged pumping by an oil diffusion pump without freezing-out the oil. The photographs clearly show the formation of projections in the oil film under the action of a strong electric field. When the electrodes are cleaned of oil, the formation of metal points and their rupture is observed accompanied by breakdown of the gap. Acknowledgements are expressed to L.N.Vorob'yev for her assistance with the experiments and illustration.

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S/109/60/005/04/017/028  
E140/E435

Cine Microphotographs of Electrodes in the Pre-Breakdown Phase and  
in Electric Breakdown in High Vacuum

There are 6 figures and 5 references, 3 of which are  
Soviet and 2 English.

SUBMITTED: July 30, 1959

Card 2/2



69084

S/120/60/000/01/024/051

E192/E382  
Eyg. L.S.

9.4/00

AUTHORS: Lobov, S.I., Tsukerman, V.A. and Eyg. L.S.

TITLE: A Controlled Low-pressure Discharge Tube

PERIODICAL: Pribery i tekhnika eksperimenta, 1960, Nr 1,  
pp 89 - 92 (USSR)

ABSTRACT: The tube described is a triode in which the main gap operates on the left-hand side of the Paschen curve, while the control gap operates at the minimum of the curve. In this way, it was possible to obtain a high breakdown of the main gap (of the order of 15 kV) and a low breakdown for the control gap (about 500 V). The discharge tube is illustrated in the diagram of Figure 1 and its operating circuit is shown in Figure 2. The tube is filled either with argon or helium at pressures of 0.2 to 0.7 mm Hg and has a diameter of 27 mm and an overall length of 80 mm. It consists of: an anode 1; a cathode 2; an auxiliary electrode 3 (Figure 1). The auxiliary or control electrode is separated from the anode by the base electrode or the cathode. The base electrode contains an aperture in its

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E192/E382

A Controlled Low-pressure Discharge Tube

centre and a priming discharge passing a current of 10  $\mu$ A is maintained between the auxiliary electrode and the base. The polarity of this discharge is such that the base electrode receives positive ions. Since a positive voltage is applied to the anode, the ions cannot pass through the aperture. A negative control pulse is applied to the auxiliary electrode.. This results in the "reversal" of the auxiliary discharge and leads to the breakdown of the auxiliary gap. The electrons produced in this discharge pass through the aperture and initiate the main discharge between the base electrode and the anode. A number of test tubes based on the above principle were produced. These were tested at voltages ranging from 12 - 14 kV. It was found that the tubes can operate at voltages ranging from 2 - 10 kV. The tubes can be triggered by a pulse having an amplitude of 2 kV with a front slope of 5 kV/ $\mu$ s. The energy necessary for the ignition of the main gap is about  $10^{-5}$  joules. The lag between the application of the

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E192/E382

A Controlled Low-pressure Discharge Tube

control pulse and the appearance of the main discharge is about 0.02 to 0.04  $\mu$ s; at lower anode voltages the time lag can increase to 0.1  $\mu$ s. The tubes can be employed to switch currents of up to 5 kA. Under these conditions, they are capable of several thousand operations without a serious deterioration. The authors express their thanks to L.G. Sinel'nikova for taking part in the preparation and the measurement of the tubes. There are 4 figures and 3 Soviet references.

SUBMITTED: January 14, 1959

✓

Card 3/3

BRISH, A.A.; TARASOV, M.S.; TSUKERMAN, V.A.

Electric conductivity of dielectrics in strong shock waves. Zhur.  
eksp. i teor. fiz. 38 no.1:22-25 Jan '60. (MIRA 14:9)  
(Dielectrics) (Shock waves)

KUZNETSOV, F.O.; LEBEDEV, N.N.; ~~MOSE~~EL', I.Sh.; TSUKERMAN, V.A.

Using coaxial photocells for recording high-speed luminous  
phenomena. Prikl. tekhn. eksp. 6 no.5:132-134 SMO '61. (MIRA 14:10)  
(Photoelectric measurements)

LEVASHOV, M.M.; TSUKERMAN, V.A.

Photographic method for the recording and time ~~spanning~~ of nystagmus and voluntary eye movements. Zhur. ush. noz. i gorl. bol. 21 no.4: 21-24 JI-Ag '61. (MIRA 15:1)

1. Iz kafedry bolezney ukha, gorla i nosa (nachal'nik - zasluzhennyi deyatel' nauki prof. K.L.Khilov) Voenno-meditsinskoy ordena Lenina akademii imeni S.M.Kirova.  
(EYE MOVEMENTS)

L 17218-63

EWP(k)/EWP(q)/EWT(m)/BDS AFFTC/ASD Pf-4/Pad JD/HW

ACCESSION NR: AP3004912

S/0120/63/000/004/0164/0169

AUTHOR: Lobov, S. I.; Tsukerman, V. A. 65

TITLE: Measuring foil and film thickness with soft X-rays

SOURCE: Pribery#1 tekhnika eksperimenta, no. 4, 1963, 164-169

TOPIC TAGS: foil, film, measuring foil thickness, measuring film thickness, soft X-rays

ABSTRACT: Experimental studies are reported of measuring metal foils and organic films  $10^{-2}$  -  $10^{-5}$  cm thick by means of soft bremsstrahlung and characteristic X-rays. A tritium-loaded Zr target was used as a source of radiation and a Geiger counter (SBT-9 end-window type), as a detector. Experimental attenuation-thickness curves for Al, Ni, and Ag foils and celluloid film are presented. It was found that a  $3 \times 10^{-6}$  g/cm<sup>2</sup> sensitivity can be achieved by selecting the wavelength of characteristic radiation corresponding to the

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L 17318-63

ACCESSION NR: AP3004912

selective absorption of the foil materials on K-, L-, or M-level. It is claimed that the method is efficient for  $(5 \text{ to } 30) \times 10^{-6} \text{ g/cm}^2$  sheet materials where other known methods are hardly applicable. Orig. art. has: 6 figures and 5 formulas.

ASSOCIATION: none

SUBMITTED: 20Sep62

DATE ACQ: 28Aug63

ENCL: 00

SUB CODE: PH, IE

NO REF SOV: 009

OTHER: 004

Card 2/2

L 11386-63

BDS

S/120/63/000/002/030/041

49

AUTHOR: Zelenskiy, K. F., Troshkin, I. A., and Tsukerman, V. A.

TITLE: A portable short-flash x-ray installation with pulsed transformers

PERIODICAL: Pribery i tekhnika eksperimenta, March-April 1963, v. 8, no. 2, 140-144

TEXT: The article describes the design and construction of portable installations for generating 0.1 sec x-ray flashes by means of a circuit with pulsed transformers in the supply circuits of two-electrode x-ray tubes with needle-shaped anodes; the device was built in order to measure its operating characteristics and to find applications. Use of needle-shaped anodes made it possible to decrease the weight of a 150 kv installation to 6.5 kg, and the weight of a 250 kv installation to 10 kg. The instruments use KES dry cells. The service life of the x-ray tubes used in these instrument is 5000 flashes; the x-ray intensity is constant to within  $\pm 20$  percent. Possible applications are suggested. There are eight figures.

SUBMITTED: March 10, 1962

Card 1/1

ja/lb

L 09216-67 EWT(1)/EWT(m)

ACC NR: AP7002767

SOURCE CODE: UR/0089/66/021/002/0112/0116

AUTHOR: Danilin, L. D.; Lobov, S. I.; Pavlova-Varevskina, A. I.; Tsukerman, V. A.

ORG: none

TITLE: Radioactive source of soft X radiation for physical investigations, technology, and medicine

SOURCE: Atomnaya energiya, v. 21, no. 2, 1966, 112-116

TOPIC TAGS: radioisotope, x radiation

ABSTRACT: Characteristics and preparation methods for the developing radiation sources using <sup>54</sup>Fe are described. Uses of the soft x radiation from the isotope for investigations of atomic structure, microradiography, and medical purposes are discussed. Orig. art. has: 5 figures. [NA]

SUB CODE: 18 / SUBM DATE: 10Dec65 / ORIG REF: 007 / OTH REF: 001

Card 1/1 ml

UDC: 621.384.60

0925 1645

ACC NR: AP0013519

UR/0120/66/000/02/0164/0168

AUTHOR: Zavada, N.I.; Manakova, M.A.; Tsukerman, V.A.

ORG: State Roentgenological Research Institute (Gosudarstvennyy rentgenoradiologicheskii institut)

TITLE: Registration of interferences from monocrystals and polycrystals at microsecond exposures

SOURCE: Pribery i tekhnika eksperimenta, no. 2, 1966, 164-168

TOPIC TAGS: x ray , x ray diffraction analysis, crystal structure, x ray tube

ABSTRACT: This paper presents a discussion of conditions for producing and photographing x-ray interferences from crystal structures of very short exposure time; and of optimum equipment for this purpose. The registration of x-ray interference maxima during microsecond time intervals is a valuable tool in the exploration of such phenomena as fast phase transformations, temperature changes and surface tensions in metals under the action of a shock wave, etc. Details of fast exposure experiments conducted with specific combinations of equipment and power parameters, as well as photographic and fluorescent screen techniques are described. By increasing the x-ray tube voltage and by the effective use of reinforcing fluorescent screens it was possible to obtain roentgenograms of monocrystalline and polycrystalline samples at very short exposures. Two-electrode impulse x-ray tubes with a needle anode proved to be efficient and con-

Curd 1/2

UDC: 539.261

ACC NR: AP6013519

vinient sources of x-ray radiation. To increase the flash energy, the voltages used were of the order of 1 million volts, and high sensitivity films with silver activated ZnS reinforcing screens were employed. Laue diagrams of Si monocrystals were obtained with a 1  $\mu$ sec exposure. A special x-ray tube (with a reversed cathode), and other optimized techniques were used to obtain interference patterns from polycrystalline samples at large Bragg angles. With a specially developed, very thin, forward, reinforcing screen in combination with the Ilford Industrial A film, and an impulse x-ray tube with a Cu cathode working at 1200 kv with a .0017 mkf condenser, the flash duration was 1  $\mu$ sec. On the photograph, interferences from atomic planes (333) and (115) of Al at Bragg angle of  $82^\circ$ , can be clearly seen. The K - K doublet corresponding to .004 $\text{\AA}$  was well defined and resolved. Authors thank A.M. Gurvich and R.V. Katonina who worked out the methodology and prepared samples of thin reinforcing screens. Orig. art. has: 3 figures and 2 tables.

SUB CODE: 20 SUBM DATE: 10Mar65 ORIG REF: 008 OTH REF: 004

Card 2/2

L 14971-66 EWT(m) DIAAP

ACC NR: AP6003243

SOURCE CODE: UR/0020/65/165/006/1278/1279

AUTHOR: Lobov, S. I.; Tsukerman, V. A.

ORG: none

TITLE: Use of radioactive sources of characteristic radiation for x-ray structural analysis

SOURCE: AN SSSR. Doklady, v. 165, no. 6, 1965, 1278-1279

TOPIC TAGS: x ray analysis, radioisotope, iron, radiation source, vanadium

ABSTRACT: Fe<sup>54</sup> foil was irradiated by thermal neutrons to produce a source of radioactive iron. The Fe<sup>55</sup> content was approximately 0.25%. An exposure time of 5 hours produced weak interference traces from the (011) plane of the iron specimen on x-ray film. It is necessary to separate the Fe<sup>55</sup> isotope from the Mn<sup>54</sup> isotope for practical use as a radiation source. It would be desirable to increase the Fe<sup>55</sup> - concentration in the iron foil to 25-30% which would increase the radioactivity of this source by two orders of magnitude over the sources used in this work. Enriched sources may be used successfully in diffractometry when recording the interference

Card 1/2

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L 14971-66

ACC NR: AP6003243

maxima of scintillation counters. The use of sources based on radioactive iron and vanadium would cut down on shielding requirements.

SUB CODE: 18/ SUBM DATE: 19Apr65/ ORIG REF: 000/ OTH REF: 000  
07/

Card 2/2 *mm*

L 15350-66 EWT(1)/EWT(m)/ETC(f)/EWG(m)/I/EWP(t)/EWP(b) LJP(c) RDW/JD/AT  
ACC NR: AP5028147 SOURCE CODE: UR/0077/65/010/006/0451/0452

AUTHOR: Lyubin, V. M.; Tsukerman, V. G.

ORG: Institute of Inorganic Chemistry, Siberian Department, AN SSSR (Institut neorganicheskoy khimii Sibirskoye otdeleniye AN SSSR)

TITLE: Sensitivity of  $Tl_2Se \cdot As_2Se$  <sup>21, 44, 55</sup> photoelectret layers in the x-ray region of the spectrum

SOURCE: Zhurnal nauchnoy i prikladnoy fotografii i kinematografii, v. 10, no. 6, 1965, 451-452.

TOPIC TAGS: selenium, tellurium, photoelectret, x ray spectrum, photoconductivity

ABSTRACT: Samples of  $Tl_2Se \cdot As_2Se$  were polarized by x-rays and depolarized by visible light. Radiation intensity was regulated by changing the anode current of the x-ray tube, keeping the voltage constant. Typical polarization characteristics for x-ray radiation are graphed. The interval between the end of polarization and the beginning of depolarization was 30 sec. Polarization voltage was kept constant and was equal to 3v. It was found that an increase in polarization time (for both po-

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UDC: 772.93.01

2

L 15350-66  
ACC NR: AP5028147

larization methods) leads to polarization saturation. Spectral characteristics of the photoconductivity of  $\text{Tl}_2\text{Se} \cdot \text{As}_2\text{Se}_3$  samples in the x-ray part of the spectrum are given. The authors conclude that  $\text{Tl}_2\text{Se} \cdot \text{As}_2\text{Se}_3$  and other materials of the Se-As-Tl system can be used in photoelectrets for producing visible x-ray images. Orig. art. has: 2 figures.

SUB CODE: 20/

SUBM DATE: 29Jun65/

ORIG REF: 003/

OTH REF: 002

Card 2/2 *BC*

L 22686-66 EWT(m)/EPF(n)-2/EWA(d)/EWP(t) LJP(c) JD/JG/GG

ACC NR: AP6001591

SOURCE CODE: UR/0120/65/000/006/0192/0193

AUTHOR: Tsukerman, V. G.

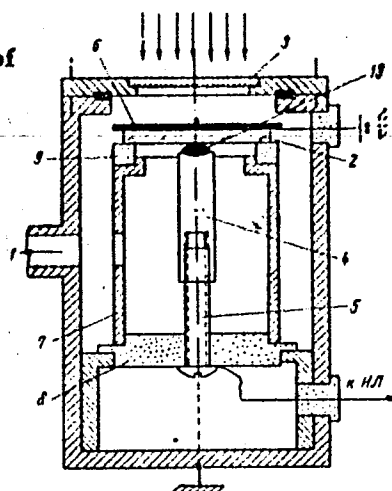
ORG: Inorganic Chemistry Institute, SO AN SSSR, Novosibirsk (Institut neorganicheskoy khimii SO AN SSSR)

TITLE: Chamber for measuring the photoconductivity of high-resistance materials, subjected to hard radiation

SOURCE: Pribury i tekhnika eksperimenta, no. 6, 1965, 192-193

TOPIC TAGS: semiconductor, photoconductivity, radiation effect, test chamber, electric device

ABSTRACT: A new chamber (see figure) for measuring photocurrents and photo-emf's in semiconductors at x-ray wavelengths is briefly described. Through port 1, the chamber is exhausted down to 0.001 torr. Specimen 2 placed on teflon ring 9 is x-rayed through beryllium window 3. Measuring electrode 4 carries mercury contact 10 which can be set by screw 5 at any height. Battery voltage is



Chamber for measuring photoconductivity of semiconductors

Card 1/2

UDC: 537.74.317.714:537.312.54

L 22686-66

ACC NR: AP6001591

applied to electrode 6; the measuring electrode is placed inside a shielding cylinder mounted on teflon base 8. The above chamber was used for measuring the x-ray conductivity of some high-resistance semiconductor films; its principal advantage lies in the fact that stray currents are completely excluded from the measuring circuit. Orig. art. has: 3 figures.

SUB CODE: 0920/ SUBM DATE: 11Nov64

Card 2/2

TSUKERMAN, V.G.; LYOBIN, V.M.; STARYY, I.B.; VAYNSHTEYN, E.Ye.

Photosensitivity of some semiconductor layers in the X-ray  
region of spectrum. Izv. SO AN SSSR no.3 Ser. khim. nauk  
no.1:124-125 '65. (MIRA 18:8)

1. Institut neorganicheskoy khimii Sibirskogo otdeleniya  
AN SSSR, Novosibirsk.

STARYY, I.B.; TSUKERMAN, V.G.; VAYNSHTEYN, E.Ye.

Study of the dark background of cadmium sulfide photoresistors  
used as transducers in recording weak X rays. Nauch. zap. Od.  
ped. inst. 25 no.2:71-73 '61.

(MIRA 18:2)

ACCESSION NR: AP6017061

UR: 0289/65/000/001/0124/0125

005 015 1521 010 592 037 521

AUTHOR: Tshkermad, V. G. Tshkermad, V. M. Shkermad, V. R. Vaynshteyn, F. Ya.

SOURCE: AS SSB - Shkermad, V. G. Tshkermad, V. M. Shkermad, V. R. Vaynshteyn, F. Ya.

sensitivity

$$\alpha = \frac{I_g}{I_d}$$

L 55978-45

ACCESSION NR: AP5017061

... characteristic of the materials,  
... and that the heat

the  $Ti_2Se$ .  $As_2Se_3$  film in the X-ray

2 figures and 1 table.

... .. khimii Sibirskogo otdeleniya AN SSSR, Novo-  
... .. Branch. AN SSSR

NO REF SOV. 0-18

OTHER 005

Card

2/2 *ALP*

ACC NR: AP6022033

SUB CODE: 09, 18/ SUBM DATE: 08Jun65/ ORIG REF: 007/ OTH REF: 001

Card 2/2

TSUKERMAN Viktor Grigor'yevich; VAYNSHTEYN, Emmanuil Yefimovich;  
SHPAKOVSKAYA, L.I., red.

[Photoconductors in X-ray dosimetry] Fotoprovodniki v dozi-  
metrii rentgenovskogo izlucheniia. Novosibirsk, Red.-izd.  
otdel Sibirskogo otd-niia AN SSSR, 1965. 52 p.  
(MIRA 18:3)

ACC NR: AP6034753

(A)

SOURCE CODE: UR/0020/66/170/005/1052/1055

AUTHOR: Vaynshteyn, E. Ye. (deceased); Lyubin, V. M.; Fedorova, G. A.; Tsukerman, V.G.

ORG: Institute of Inorganic Chemistry, Siberian Department, Academy of Sciences SSSR (Institut neorganicheskoy khimii Sibirskogo otdeleniya Akademii nauk SSSR); Institute of Geochemistry and Analytical Chemistry im. V. I. Vernadskiy, Academy of Sciences SSSR (Institut geokhimii i analiticheskoy khimii Akademii nauk SSSR)

TITLE: Some singularities of the internal photoeffect in layers of the Se-As-Tl system in the visible and x-ray regions of the spectrum

SOURCE: AN SSSR. Doklady, v. 170, no. 5, 1966, 1052-1055

TOPIC TAGS: selenium compound, arsenic compound optic material, thallium containing alloy, internal photoeffect, photoconductivity, x ray effect

ABSTRACT: The authors report the first results of attempts to increase the photoconductivity of Se-As thin semiconducting layers by introducing thallium. The raw material of the Se-As-Tl system was synthesized by fusing selenium, arsenic, and thallium in vacuum, and the investigated films were prepared by evaporation in vacuum by a method close to that described by the authors earlier (FTT v. 4, 401, 1962). The electrodes were tin dioxide and aluminum. The compositions of the layers investigated were  $Tl_2Se \cdot 10As_2Se_3$ ,  $Tl_2Se \cdot 2As_2Se_3$ ,  $Tl_2Se \cdot As_2Se_3$ ,  $2Tl_2Se \cdot As_2Se_3$ , and  $3Tl_2Se \cdot As_2Se_3$ . The layer thickness ranged from 0.5 to 7  $\mu$ . The conductivity and photoconductivity were investigated by a method described in the earlier paper (and in Pribori i tekhnika

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UDC: 537.312.5

ACC NR: AP6034753

eksperimenta, no. 6, 192, 1965). An increase in the thallium concentration reduced the dark resistance and shifted the spectral characteristics of the photoeffect toward the long-wave region. The greatest sensitivity was observed in  $Tl_2Se \cdot As_2Se_3$ . The x-ray sensitivity was practically constant in the range 0.5 - 1.5 Å, and then increased slowly with increasing x-ray wavelength. The photoeffect depends on the polarity of the voltage applied. At negative potential on the tin-dioxide electrode the spectrum has a single maximum near 350 - 370 nm and depends little on the thickness of the layer. For positive potential, maxima appear both at short and long wavelengths (near 600 nm) and shift toward longer wavelength with increasing thickness. The results are interpreted from the point of view of the processes that occur in the regions near the electrodes. The dark current increased faster than linearly with increasing applied voltage, but the photocurrent exhibited rapid saturation. The quantum yield ranged from 800 to 1400 electrons/quantum and the ionization energy required to produce a single electron-hole pair is 5.7 - 10 ev, close in value to that obtained for many photoconductors sensitive to x-radiation. It is concluded that the Se-As-Tl system can serve as an effective photoconductor for both the visible and the x-ray regions. This report was presented by Academician V. V. Voyevodskiy 14 January 1966. Orig. art. has: 3 figures.

SUB CODE: 20/ SUBM DATE: 20Dec65/ ORIG REF: 011

Card 2/2

TSUKERMAN, V.G.

Scleroderma

Successful penicillin therapy of generalized progressive scleroderma. Vest. ven. i dorm.,  
no. 1, 1952.

9. Monthly List of Russian Accessions, Library of Congress, MARCH 1952 ~~1953~~, Uncl.

TSUKERMAN, V. G.

USSR/Medicine - Sclerodemia Penicillin Jan/Feb 52

"Successful Treatment of Progres. Gen. Sclerodemia  
With Penicillin," V. G. Tsukerman

Vest Venerol i Dermatol" No 1 ; 51

Describes clinical history of an advanced case of  
sclerodema. Patient was hospitalized from 2 Dec  
50 to 6 Jan 51. Treatment consisted of injections  
of 40,000 units of penicillin every 3 hrs. Total  
amt of penicillin received was 11 million units.  
Physiotherapy (exercises) was prescribed after  
about 6 months of hospitalization. Patient was  
discharged in a greatly improved condition.

222T17